COST *and* MANAGEMENT

VOL. XXVI MARCH No. 3

Mr. Terry is vice-president of Canadian Sumner Iron Works Co. Ltd., Vancouver, B.C. He joined the firm in 1923, as junior accountant and in 1943 he became secretary-treasurer.

Mr. Terry is a past president of S.I.C.A. of Canada, and was first president of the B.C. Society. He helped to organize the B.C. Chapter of the American Foundrymen's Association and became its first president. He is a member of the executive of the B.C. branch of the Canadian Manufacturers Association and a member of the Certified General Accountants Association.

Mr. Hood is Assistant Comptroller, Deep Freeze Appliance Division, Motor Products Corp., Detroit. He entered employ of this firm as Cost Clerk in 1939. In 1949 he became Cost Supervisor of Detroit Plant of Automotive Division. He was in Military Service from 1941 to 1946. He has been a member of N.A.C.A. since 1947.

REGULAR DEPARTMENTS

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SOCIETY NOTES

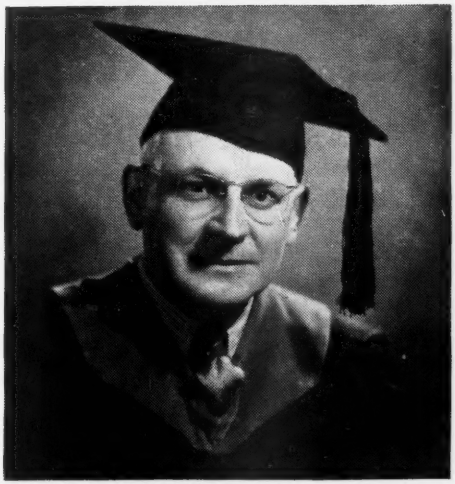
SOCIETY OFFICE IN NEW QUARTERS

It was only three years ago that the offices of the Canadian and Ontario Societies were moved into enlarged quarters. It was only a short time, however, before it became evident that the rapid growth and expanding activity of the Society would soon tax existing facilities.

While the membership has increased substantially during the past three years, it is rather significant that the number of inquiries for information has increased in much greater proportion. The ratio of the number of requests for services to our total membership has more than doubled in that period. This is due in large part to the publication of the Topical Index of our Library, but it also reflects the ever-increasing demand for more exacting and efficient methods of cost ascertainment, analysis and forecast in all classes of business.

These factors combined to tax the facilities of the National Office and the need for more commodious quarters became imperative. This need was recognized by the Canadian Society Executive Committee and by the Ontario Council, and authorization was given to secure enlarged quarters. It was most fortunate that adequate space became available in the same building on the sixth floor. We take over our new quarters on March 1st and it promises to afford satisfaction in every respect.

This is the third move we have made in the same building since coming to the present location in 1937. Some idea of the phenomenal growth of the Society in the intervening period may be gained from the fact that at that time we had 266 members and five chapters as compared with more than 3,400 members and 29 chapters to-day.



JOSEPH H. THOMPSON, B.Acc., F.C.A., R.I.A.

It is with much regret that we announce the passing of Joseph H. Thompson, B.Acc., F.C.A., R.I.A., Dean of the College of Commerce, University of Saskatchewan, and third Vice-President of the Society of Industrial & Cost Accountants of Canada. Death came suddenly Sunday morning, March 9th, after suffering a cerebral hemorrhage at his home the previous evening. He was in his fifty-sixth year.

Born in England, Dean Thomson came to Canada at an early age and received his education in Saskatoon. He enlisted for service in the First Great War with Royal Air Force overseas and on his return he resumed his studies in accountancy and qualified as a Chartered Accountant.

In 1932 he became an instructor in accounting at the University of Saskatchewan and on the outbreak of the Second World War he was appointed Deputy Assistant Adjutant General of Military District 12. He returned to the university in 1940 as Dean of accounting and at the same time served as Commanding Officer of the University Officers' Training Corps.

Dean Thompson was a Charter member of the Society of Industrial & Cost Accountants of Saskatchewan and contributed much to its successful organization and incorporation. He has served on the Co-ordinating Educational Committee and in 1949 he was elected to the executive of the Canadian Society.

His loss will be felt keenly by the many organizations and countless individuals who had the benefit of his influence.

To Mrs. Thompson and his two daughters, Joan and Margaret, we extend our sincerest sympathies.

31st Cost and Management Conference

VANCOUVER, B. C., JUNE 24, 25 and 26

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"MANAGING TO-DAY'S DOLLAR"

The programme planned by the Conference Committee will help you solve it and it will point the way to better control. You can't **afford** to miss the lectures on this subject.

Plan now to attend the Conference in Vancouver. British Columbia is noted for the warmth of its hospitality, the magnificence of its scenery and its colourful history and traditions.

The Local Chapters are looking forward to entertaining delegates from across Canada, the Atlantic Coast and Newfoundland.

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Chapter Notes

HAMILTON CHAPTER

The regular meeting of the Hamilton Chapter of the Society of Industrial and Cost Accountants was held in the Burgundy Room of Fischer's Hotel, February 14th. There was a large attendance to welcome the Toronto Chapter and the Society's Dominion President, Mr. George I. MacKenzie, B.Sc., R.I.A.

The chairman, Mr. A. R. Wright, R.I.A., asked for a two-minute silence in respect to our late King, after which he welcomed the many visitors. Mr. J. N. Allan introduced Mr. MacKenzie, who gave an encouraging report of the progress of the Chapters across Canada.

Mr. George Moller, D.Jur., C.A., then introduced the panel of three:—Professor J. E. L. Graham, M.A., B.Litt., of McMaster University; Professor D. C. MacGregor, B.A., of University of Toronto; and Mr. David Lewis, B.A., National Vice-Chairman of the C.C.F. Party. The topic of discussion was "Wages, Prices and the Economic Outlook". The three speakers brought out some very interesting points and it was generally agreed that the inflation spiral could be partly controlled by first industry agreeing that labor is entitled to a decent standard of living; second, that labor try not to take advantage of the times and ask for unreasonable wages; and third, that Government control their spending and in this way keep money out of circulation.

LONDON CHAPTER

The London Chapter held its monthly meeting on Thursday evening, February 28th, in the Rainbow Room of the Y.M.C.A. Forty members and guests attended the dinner at 6.30 p.m. and many more attended the technical session which began at 7.30.

Our guest speaker for the evening was George Moller, D.Juris, C.A., who spoke to us on "Influence of Taxation on Business Fiscal Policy".

The lecture was thoroughly enjoyed and during the discussion period which followed, many questions were asked and answered.

Other events in the programme included an up-to-date word picture of what the students are doing and what is expected of the senior members toward helping the students with their difficulties. This year our students have really got under way and we feel sure that the efforts will pay dividends at examination time.

Special mention was made of the coming Conference at London on May 29th, 30th and 31st. London Chapter will spearhead this event and every member was urged to get behind the wheel and attach himself to one of the committees to add to the success of the undertaking.

MONTREAL

The Montreal Chapter met in conjunction with the Institute of Internal Auditors on Monday, February 18th, 1952, in the Windsor Hotel Rose Room.

A dual team of speakers discussed the subject of Cost Accounting and Internal Auditing. Mr. A. E. Bishop, C.A., Vice-Chairman of our Chapter,

spoke first. He indicated the necessity for Cost Accountants to broaden their outlook and develop an over-all reciprocation with the general accounting section and the internal audit branch. The very specialized nature of the Cost Accountants work develops a wealth of detail that can be advantageously used by all forms of Management, if the facts are clearly presented.

Mr. P. H. Lett, C.A., Chairman of the Montreal Chapter, Institute of Internal Auditors, spoke on the necessity of examination of cost accounting records by the internal audit section. Mr. Lett confirmed Mr. Bishop's view that the Internal Auditor must not be unduly concerned with the arithmetical accuracy of figures but critically examine cost schedules, interpret these and ferret out the story indicated by variances from standard.

Both Institutes were well represented and the mutual opinion was to the effect that these joint meetings should be an annual affair.

OTTAWA

On February 21st, the Ottawa Chapter was privileged to hear a talk by Professor K. F. Byrd, Professor of Accounting at McGill University. Professor Byrd discussed the problem of changing money value and its effect upon the accounts. The seriousness of the present inflationary situation was first outlined with specific attention being directed to the belief that there was to be a continued long-term inflationary period. The results of such monetary depreciation showed its effect on the profit and loss accounts in the improper matching of certain expense dollars based on old historical cost and the consequent over-statement of profits. Because of this profit over-statement, funds were being drained from going concerns through resulting high income tax load and through demands by unions, shareholders and others upon the "so-called" current profit balance. This drainage of funds could only lead to ultimate seeking by management of new investment funds at a later date for the replacement of worn-out facilities. This fact is a serios challenge to the accounting profession because of the impropriety of seeking funds for *replacement* from investment sources.

TORONTO STUDENT SECTION

The Februrary meeting of the Toronto Chapter Student Section was held on Thursday the 21st, at the Hearthstone.

The importance of the subjects to the students and the high calibre of the two speakers no doubt had a bearing on the large attendance.

Mr. John Logan, R.I.A., had chosen for his subject "Standard Costs". After showing how these were made up, Mr. Logan went on to the use of Standard Costs and how the variance was determined. He stressed the fact that it was imperative that the all-important information must now be passed on to the proper authority and not buried in a desk drawer.

Mr. Wally Irwin spoke on "Wage Incentives" and explained very thoroughly some of the conditions under which wage incentives had been installed in his own organization. This was followed by an illustration of how incentives were best suited to some types of operations and in other cases almost impracticable.

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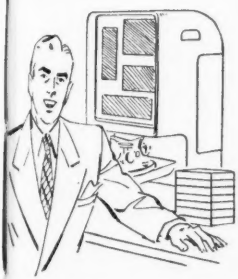

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By N. R. BARFOOT, R.I.A.

UNEMPLOYMENT INSURANCE

The Unemployment Insurance Advisory Committee in its annual gives some interesting figures on the state of the fund.

Balance in fund as at March 31st, 1951	$664.6 million
Increase in immediate past period	81.9 million
Gross revenue in past period	171.9 million

A breakdown of the revenue shows 128.7 million from employer-employee contributions. Government contribution, 25.7 million and interest earned over 15 millions.

Benefits paid in the period amounted to 90 million.

Aside from cash requirements, the whole of the fund is invested in obligations of the Government of Canada. An average yield of 2.57 percent interest was obtained.

FIRE AND CASUALTY INSURANCE

This is big business in Canada and amply demonstrated by the following facts:—

300	competitive companies are registered with the Dominion of Canada.
300	millions of premiums are handled yearly.
23	billion of fire insurance alone is covered.
152.5	millions paid on claims settlements in 1950.
2.7	millions in profit attained, or less than 1 percent of income from premiums.

CENSUS — 1951

1941 Census		11,507,000
1941-1951 Natural Increase		3,197,000
Deaths for Same Period		1,215,000
Basic 1951 Figure		13,489,000
Plus Newfoundland	348,000	
Plus Immigrants	591,000	
Plus 50,000 Away When Census Taken	50,000	
Gross Figure for 1951		14,478,000

Official emigrant figures show a total of 286,000. An additional 200,000 are also unaccounted for, so that the net figure, at least on paper, is a population of 13,992,000, which is a trifle disappointing.

ASBESTOS

This useful material has been mined since 1878.

There are presently over 2,000 uses for asbestos, including uses as a component of asphalt compounds, friction materials, plastics, paints, cements and lubrication greases.

In 1932 shipments were 122,977 tons, worth 3 millions.
In 1940 shipment were 346,805 tons, worth 15.6 millions.
In 1951 shipments were 967,375 tons, worth 78.8 millions.

Canada produces ten times as much as any other country and over three times as much as the rest of the world together.

ADVERTISING AND COST ACCOUNTING

It is very interesting to read that the Canadian Association of Advertising Agencies recommends a cost accounting approach to controlling the financial activities of every phase of advertising agency work. It is management's most effective tool says the Association.

A recent book, "Cost Accounting for Advertising Agencies", written by F. W. D. Campbell, is just off the press.

Points stressed are:—

Discovery of *loss* accounts.

Reduction of costs on individual accounts without impairment of service.

Enhancement of service without increasing costs.

Results to be gained are:—

A ruling-out of unnecessary expenses.

A more realistic transfer of executive work load to important revenue-producing work.

Pre-arranged fees for special jobs.

In the service fee for unprofitable accounts or for accounts where the client demands a high level of servicing out of proportion with the account's value, agencies have the answer to narrow profit margins. Where cost accounting is in force, agencies can show clients concrete, black and white reasons why a service fee might be necessary. In such instances, agencies report a willingness on the part of the client to co-operate with a service fee.

The essentiality and good service rendered by sound cost accounting practice seems to be demonstrated new in a field hitherto untouched by the cost accountant.

U.S. CAPITAL IN CANADA

Among the many sources of U.S. capital for the Canadian expansion, it is of note that United States Life Insurance Companies have nearly $2,500 million invested in Canada. This is an increase of 1,250 million in the last ten years.

The money is invested in the following ways:—

Federal Bonds	900 million
Provincial and Local Bonds	600 million
Corporation Bonds	750 million
Industrial Bonds	50 million
Railroad Securities	50 million
Mortgages	150 million

Present total of corporate bonds is three times that of ten years ago. Notable among these was a 100 million commitment for iron ore development.

CURRENT ARTICLES OF INTEREST TO INDUSTRIAL ACCOUNTANTS

ACCOUNTANTS

THE ACCOUNTANT'S ROLE IN THE ANNUAL REPORT, by J. O. Nicklis — N.A.C.A. Bulletin, February 1952, Sec. 1.

ACCOUNTING

ACCOUNTING CONCEPTS AND NATIONAL INCOME, by E. L. Kohler — The Accounting Review, January 1952.

INITIAL DEVELOPMENT OF ACCOUNTANCY, by Calvin C. Potter — The Canadian Chartered Accountant, January 1952.

SURVEY INVESTIGATES ACCOUNTING FOR PENSION COSTS, by Warde B. Ogden, C.P.A. — The Journal of Accountancy, January 1952.

ACCOUNTS RECEIVABLE

FINANCING AND FACTORING ACCOUNTS RECEIVABLE, by Theodore H. Silbert — Harvard Business Review — January-February 1952.

ASSETS

FIXED ASSET REPLACEMENT INDICES — The Accountants Journal, January 1952.

AUDITOR

ACCOUNTING DEVELOPMENTS IN THE ATOMIC ENERGY ENTERPRISE, by Martin L. Black, Jr. — The Accounting Review, January 1952.

BREAK-EVEN

METHODS AND POTENTIALITIES OF BREAK-EVEN ANALYSIS, PART III, by Joel Dean — The Australian Accountant, November 1951.

CAPITAL

PAYMENTS FOR THE USE OF CAPITAL AND THE MATCHING PROCESS, by George J. Staubus — The Accounting Review, January 1952.

THE COST ACCOUNTANT

COMPETENCE BALANCE SHEET FOR THE COST ACCOUNTANT, by J. B. Fenner — N.A.C.A. Bulletin, January 1952, Sec. 1.

COST ACCOUNTING

UTILIZING PAST, PRESENT AND FUTURE COSTS, by John G. Larson — N.A.C.A. Bulletin, February 1952, Sec. 1.

COST CONTROL

DAILY POSTINGS GIVE US FINGERTIP COST CONTROL, by Kenneth A. Boos — N.A.C.A. Bulletin, February 1952, Sec. 1.

VARIANCE ANALYSIS FOR REDUCTION AND CONTROL OF MANUFACTURING COSTS, by John Pugsley — N.A.C.A. Year Book, 1951.

COST DATA

UTILIZING PAST, PRESENT AND FUTURE COSTS, by John G. Larson — N.A.C.A. Bulletin, February 1952, Sec. 1.

CURRENT ARTICLES OF INTEREST

ECONOMICS

DEALING WITH PRICE LEVEL CHANGES IN ACCOUNTING, by Maurice H. Stans, C.P.A. — The Journal of Accountancy, January 1952.

INFLATION AND THE CAPITAL OF INDUSTRY — AN F.B.I. REPORT — The Accountants Journal, January 1952.

EDUCATION AND TRAINING

SOME CURRENT PROBLEMS IN THE TEACHING OF ACCOUNTING, by Harry D. Kerrigan — The Accounting Review, January 1952.

THE USE OF PROJECTED VISUAL AIDS IN THE TEACHING OF COST ACCOUNTING, by William E. Thomas — The Accounting Review, January 1952.

HOTELS

HOTEL ACCOUNTING, by Ernest B. Horwath and Louis Toth — The Ronald Press Co.

INCENTIVES

INCENTIVE MANAGEMENT, by James F. Lincoln.

INDUSTRIAL ACCOUNTING

INDUSTRIAL ACCOUNTANCY, by John S. Craig, B.A., C.A. — The Accountants Magazine, February 1952.

INDUSTRIAL RELATIONS

THE CONTROLLER'S APPROACH TO ECONOMIC EDUCATION FOR EMPLOYEES, by Fred Rudge — The Controller, January 1952.

INSURANCE

USE AND OCCUPANCY AND EXTRA EXPENSE INSURANCE, by Marshall B. Dalton — The Controller, February 1952.

INTERNAL AUDITING

INTERNAL AUDIT OF CONTROL SYSTEMS, by T. F. Griffin — The Internal Auditor, December 1951.

HOW INTERNAL AUDITING PROVIDES MANAGEMENT CONTROL, by V. Z. Brink — The Internal Auditor, December 1951.

THE ROLE OF THE INTERNAL AUDITOR IN CANADIAN OIL COMPANIES, LTD., by W. H. Rea — The Internal Auditor, December 1951.

INTERNAL CONTROL

INVESTIGATIONS AND DISCLOSURES OF DEFICIENCIES IN INTERNAL CONTROL, by J. M. Gasarch — The Internal Auditor, December 1951.

INVENTORIES

THE EFFECT OF INVENTORY VALUATION ON PROFITS AND TAXES, by Jackson W. Smart — N.A.C.A. Year Book, 1951.

HOW TO CONSTRUCT A PRICE INDEX FOR LIFO INVENTORIES, by William A. Spurr, Ph.D. — The Journal of Accountancy, February 1952.

LIFO AS AN OPERATING TOOL, by Henry Keyserling — The Controller, February 1952.

COST AND MANAGEMENT

LABOR

ACCOUNTING FOR SUPPLEMENTARY COSTS OF LABOR, by Ralph B. Knott — N.A.C.A. Year Book, 1951.

SUPPLEMENTARY COSTS OF LABOR — A PANEL SESSION — N.A.C.A. Year Book, 1951.

MAINTENANCE

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Cost of Castings—The Fallacy of Averages

By NORMAN TERRY, C.G.A., R.I.A.

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According to the author, the practice of averaging costs is the basic course of inconsistency in the pricing of castings resulting in widely varying degrees of success in foundry operations. The suggested answer is job costs and examples of computing unit costs are submitted to support this thesis.

Living costs are rising all around us. Increased wages, material shortages, electric power restrictions are all combining to shrink the true purchasing value of the dollar. We are all faced with higher costs of doing business, so automatically up goes the cost of castings. Naturally our customers always *have* questioned the high cost of castings, but to-day they are becoming quite *emphatic* in their criticisms. Some have investigated substitutes for castings — tried fabricated steel construction, for example, and too often found such changes satisfactory, thus resulting in greater criticism of our casting prices. What of these changes in our economic position? Must we accept them with resigned complacency? Instead, do they not suggest our looking down into the fundamental financial structure of the foundry industry, checking into our own method of doing business to see if we are being practical and making the most of our position and opportunities? Are we justified in our present price of castings? Should we charge more or less?

Manufacturing castings is basically a simple procedure. It includes briefly:—

(1) *Raw Materials* — in the form of pig iron and scrap for cast iron. Steel scrap and alloys for cast steel. Metal ingots and/or scrap metal for non-ferrous castings.

(2) *Melting facilities* in the form of cupolas and coke; electric furnaces with essential electric power, and crucible furnaces together with coke, oil or gas-firing equipment.

Therefore, without becoming involved in accounting procedures, let us examine some of the fundamental reasons why some castings are expensive, some are cheap, why occasionally

a foundry operator is prosperous, but why so many foundries seem to be so poor, while their castings seem to cost so much.

One of the tragedies of the foundry industry is its endeavour to cost and sell castings by the pound. We must all agree that every class of casting differs in structure and construction — that one casting weighing, say ten pounds, might require twice or ten times the labor that another casting weighing 100 pounds or ten times the weight. Yet foundries to-day are still selling from price lists where the sale price of the casting per pound is automatically reduced as the individual weight of the casting increases — the sliding scale principle.

To secure accurate costs, individual castings should be costed separately instead of using the very inaccurate method of averaging the cost of castings by the variation in individual weights. Naturally every foundry operator feels he is an expert in setting foundry costs and setting casting prices. What should we in the foundry industry consider a fair return on the capital invested in our foundry business, that is our buildings, equipment, machinery, etc.? Three percent, five percent or ten percent per annum? A gilt-edged Government Bond pays 3¾ percent, first mortgage bonds, 5 percent, industrial bonds 5 to 6 percent. Or alternatively, what profit percentage, after depreciation and income taxes, should we expect from our casting sales — 1 percent, five percent, ten percent? I question if many foundries earn *more than five percent on sales.*

Cost Elements

The most successful cost system in any foundry must be one that is simple to operate. However, any information compiled by the cost accountant in the office is based on information supplied by the foundry personnel, so that it is most essential that all information furnished by the foundry be accurate and complete, *and prompt.* Without attempting to explain any specific cost system, let us examine some cost essentials.

(1) *Melting Department.* The first element of cost is to ascertain the true cost of the metal. This is generally accepted as the molten metal cost at the spout. All the elements of melting cost should be compiled on simple report forms which will provide space to show all metal used; all metal should be accurately weighed, such as pig iron, scrap, alloys, etc. In a cupola the coke should be weighed and recorded. In an electric

steel furnace in addition to the material melted the electricity used should be reported, while for brass melting the fuel used should be recorded. All labor used in preparing the metal, maintaining the furnace, all furnace maintenance material, etc., including a proportion of the depreciation on the equipment should be added together to arrive at a true, accurate cost of the material melted each heat each day and for any given period.

(2) *Coremaking.* In any job — order system in foundry operations, every effort should be made to charge the cost of coremaking to each individual job. The time making the cores should be charged to the job on suitable time sheets. The core department cost should be charged with all core materials used, core oven fuel, depreciation on core department equipment and all these indirect core expenses charged to the job on the basis of core hours worked, or in proportion to coremakers' wages.

(3) *Moulding.* For individual floor moulding, keeping moulding costs on each job should be comparatively simple. Where moulding machines are used extensively the problem becomes complex but not beyond solution. Naturally machine moulding requires proportionately more mechanical equipment and often more indirect labor, and utilizes more floor space. While in straight manual moulding, the charging of the actual wages to the individual job should be adequate. In machine moulding a formula for each machine, or the whole department, must be worked out. Usually match plates are used to handle a large volume of castings in each flask, which, together with special moulding flasks, sand control, and mechanical conveniences, will multiply the tonnage of castings produced compared to the moulding wages expended. After a time study and check on the production of a machine moulding unit or department it is usually more practical to work out the cost of the castings produced as a group by consolidating all the elements of moulding and coremaking wages, indirect materials, indirect labor, and overhead, into the cost for the day, week or given period; then

dividing same by the tonnage or number of good castings produced to arrive at the cost of each casting or the net cost per pound. In any event for either floor and bench hand moulding or machine moulding, a report of each employee's time should be filed each day giving details of jobs worked, and the details of the castings moulded.

(4) *Pouring and Cleaning.* While the process of pouring and cleaning is usually considered as indirect expense and charged to the total cost of castings through general overhead distribution, it should be considered good business to allocate these costs to specific jobs where pouring necessitates special pouring equipment and unusual mechanical devices. Also where complicated castings require an unusual amount of cleaning due to special core work, such time should be recorded against the specific castings so that they cover their fair share of this extra time. Otherwise, if this added cost is charged against the general run of regular castings it will result in increasing the over-all cost of castings and give inaccurate costs.

(5) *Indirect Expenses or Overhead.* This factor in the cost of producing castings probably accounts for the high cost of castings to-day. During the last few years, all industries, including our own, have been called upon to absorb an ever increasing amount of government taxes, group insurance plans, vacation and holiday pay, unemployment insurance, compensation assessments, etc., in addition to our regular fixed charges which have also advanced. Thus, unless these expenses are carefully recorded and fairly distributed, inaccurate costs result and incorrect sales prices follow, with disaster, the obvious finale.

Indirect Expenses or Overhead

Under this heading the fixed charges of operating the foundry should be included. These include depreciation reserves on buildings, machinery and equipment; fire insurance on the entire foundry; municipal property taxes and rent of property used for the business; trucks and cartage costs; electric power and light (exclusive of power and gas for melting); heating costs; repairs to buildings and fixtures; assessments for

compensation and similar indirect charges not applicable against individual jobs, departments or operations; service wages and salaries such as storekeepers, shippers, timekeepers, watchmen, etc.

While the foregoing is intended to include all indirect expenses applicable to manufacturing, some organizations may wish to add their pattern department as part of their foundry cost. Depending upon the nature of the business and if their pattern maintenance can be classified as an integral part of their castings production, their pattern manufacturing, repairing, storing, etc. might be correctly added to their basic castings costs, either as a specific charge for each casting, or at an average price per pound of castings made, or on a percentage basis of the over-all monthly cost. Wherever possible, the pattern department costs should be recorded separately — and may be added later, on a basis best determined by the type of business. In this way a true cost of producing castings only can be established. Comparison can be made later in cases where the customer supplies his own pattern, and no pattern costs would be involved.

The total general administration costs should also be recorded separately from foundry manufacturing overhead costs, for obvious reasons. This will include items such as selling expenses, travelling, advertising, office expenses, and special administration expenses necessary for the successful operation of every business.

Detail Costs

While we have to some extent, generalized on the essential factors to be considered in arriving at accurate foundry or casting costs, we should now be more specific and by comparison show where variations in arriving at the cost of producing similar castings may easily occur where some of the fundamentals are overlooked. Let us compare some cast iron castings and analyze methods of arriving at castings cost per piece and per pound.

Example I.

For simple calculations we will assume this particular foundry produces 100 tons per month (20 working days). The average weight of castings is 50 lbs. each, and 4,000 good castings are made in the month (20 days). The molten iron cost, as described, costs 5½ cents per pound. The core depart-

ment costs (exclusive of coremakers) is $1,000.00 or $10.00 per ton or ½ cent per pound or 25 cents per casting. The moulding department supplies cost $3,000.00 or $30.00 per ton, 1½ cents per pound; or 75 cents per casting. The fixed charges or indirect expenses total $4,000.00 which averages $40.00 per ton, 2 cents per pound or $1.00 per casting. The indirect labor (pouring, shaking out, cleaning, etc.) totals $8,000.00 or averages at $80.00 per ton, 4 cents per pound or $2.00 per casting.

If the total direct labor cost for moulding and coremaking amounted to $4,000.00, the average cost per ton would be $40.00 — cost per pound 2 cents or $1.00 per casting.

If we estimated the man hours are

2,666 for moulding and cores
6,334 for miscellaneous labor

9,000 TOTAL

This would mean 90 man hours per ton of good castings.

To obtain the total cost for the month's operations we would arrive as follows:—

	Total	Per Lb.	Per Casting
Melting Cost	$11,000.00	$.055	$2.75
Moulding and Coremaking	4,000.00	.020	1.00
	$15,000.00	.075	3.75
Core Department	$ 1,000.00	$.005	$ .25
Moulding Department	3,000.00	.015	.75
Fixed Charges	4,000.00	.020	1.00
Indirect Labor	8,000.00	.040	2.00
Overhead Costs	$16,000.00	$.080	$4.00
Total Cost	$31,000.00	$.155	$7.75

From this estimated calculation the total cost of the month's production cost $31,000.00 and the *average* cost per pound was 15½ cents and the *average* cost per casting $7.75 each.

To provide for general administration and sales expenses plus profit, say 25 percent should be added to these figures which would mean the total selling price should be $38,750.00; the average sales price should be 19.4 cents per pound and sales price per casting $9.69 each.

This would be excellent if the law of averages would always work out — but such rarely happens in the foundry industry. The next month this same foundry might quite easily have another picture and still work to capacity, for comparison take:—

Example 2.

Total tonnage	80 tons for one month		
Average casting	20 lbs. each		
Number of good castings	8,000		
Molten Iron	5½ cents per lb. (unchanged)		
Core Dept., total cost	$1,200.00 or .007½	per lb. or	.15 per casting
Moulding Dept., total cost	4,000.00 or .025	per lb. or	.50 per casting
Fixed Charges	4,000.00 or .025	per lb. or	.50 per casting
Indirect Labor, total cost	8,000.00 or .050	per lb. or	$1.00 per casting
Direct Labor, total cost	4,000.00 or .025	per lb. or	.50 per casting

Total man hours are 9,000 (unchanged) and equal 112½ man hours per ton.

The total cost would be:—

	Total	Per Lb.	Per Casting
Melting Cost	$ 8,800.00	$.055	$1.10
Moulding and Coremaking	4,000.00	.025	.50
	$12,800.00	$.080	$1.60
Core Department	$ 1,200.00	$.0075	$ .15
Moulding Department	4,000.00	.025	.50
Fixed Charges	4,000.00	.025	.50
Indirect Labor	8,000.00	.050	1.00
Overhead costs	$17,200.00	$.1075	$2.15
Total cost	$30,000.00	$.1875	$3.75

From these estimated figures the total month's cost was $30,000.00, the *average* cost per pound 18¾ cents, and the average cost per casting was $3.75 each.

To operate at a profit the total sales should be ($30,000.00 plus 25 percent) $37,500.00 — the average sales price 23.44 cents per pound or $4.69 per casting.

Comparing the previous month's operation it is obvious that average costs are very dangerous.

Example 3.

Now to calculate individual casting costs from the basis of these two months' operations, it is obvious that the question of indirect expense allocation may change the cost and sales figures.

COST OF CASTINGS — THE FALLACY OF AVERAGES

Assume ten castings to be made — 50 pounds each, requiring one hour coremaking each and two hours moulding each:—

	Example 1		Example 2	
	Per Lb.	Per Cast.	Per Lb.	Per Cast.
Castings weight —				
50 lbs. at 5½c	$ 2.75	$ 2.75	$ 2.75	$ 2.75
Moulding and Coremaking —				
3 hrs. at $2.00	6.00	6.00	6.00	6.00
Core Department	.25	.25	.375	.15
Moulding Department	.75	.75	1.25	.50
Fixed Charges	1.00	1.00	1.25	.50
Indirect Expense	2.00	2.00	2.50	1.00
Cost 25½c per lb.	$12.75	$12.75	$14.125	$10.90

From the comparison it is obvious that taking the result of these two months as a basis, first by calculating indirect expenses on the basis of average cost per pound, then on the basis of average cost per casting, two sets of figures result with wide variations — which is correct?

Another basis of calculating overhead distribution is on the basis of a percentage of the direct labor.

In Example 1, direct labor (moulding and coremaking) costs were $4,000.00 while indirect costs were $16,000.00 or 400 percent of direct labor costs. While in Example 2 direct costs were $4,000.00, while indirect costs were $17,200.00 or 430 percent. It may be possible that by comparing several months' operations and allowing for variations in average casting weights and total production, that a figure of 400 percent might be a fair basis of calculations. If so, Example 3 would work out as follows:—

Casting Metal Cost, 50 lbs. at 5½ cents	$ 2.75
Moulding and Coremaking	6.00
Overhead 400 percent	24.00
Total Cost	$32.75

Much higher than any previous calculations

Example 4.

If castings — weight 100 lbs. each, with half an hour coremaking and one hour moulding each. Could be figured:—

	Example 1		Example 2		Example 3
	Per Lb.	Per Cast.	Per Lb.	Per Cast.	Percentage
Metal —					
100 lbs. at 5½c	$ 5.50	$ 5.50	$ 5.50	$ 5.50	$ 5.50
Moulding and Coremaking					
1½ hrs.	3.00	3.00	3.00	3.00	3.00
Overhead 8c per lb.	8.00	4.00	10.75	2.15	12.00
Cost per casting	$16.50	$12.50	$19.25	$10.65	$20.50
Cost per pound	16½	12½c	19¼c	$10.65	20½c

From the foregoing figures it is obvious that the calculating of costs in the foundry where fluctuations in casting structure, size, volume and specifications vary, is a very exacting job. It calls for constant study and compiling of statistics over a long period of time. Carefully scrutinized, such figures will set a sound basis of establishing a fair method of overhead distribution applicable to the individual foundry and the type of castings produced. Calculations in the steel and non-ferrous foundry are similar and prove:—

(1) Establishing average casting costs by the pound is dangerous.

(2) Overhead distribution should be only settled after exhaustive studies of several methods of calculation and comparing results of each method before deciding the best for each particular foundry.

(3) To make the foundry industry successful and prosperous every foundry operator should establish accurate cost controls, decide upon reasonable mark-ups and set selling prices to bring a fair return on the capital investment and risk involved, allowing sufficient margin to re-invest in modern equipment and keep the industry modern and progressive to meet the challenge of the competitive market of to-day and to-morrow.

Properly organized systems of cost control will automatically provide a cost reduction program, since these plans call for establishing standards of operation which determine exact materials to be used in production, methods of production and quality standards. Only after operation standards have been established can standards of performance for operators be set.

Material Control in Nickel Chrome Plating

By ROBERT T. HOOD

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With the use of certain technical data in the process of nickel chrome plating, it is possible to accurately apportion plating material as productive material rather than through arbitrary distribution of overhead.

Nickel chrome plating operations have presented numerous problems to cost accountants and paramount among them are those arising from control of the plating materials.

The most important of these problems are:—

1. Necessity of furnishing data regarding plating operations, from the standpoint of costs and efficiency.
2. Budgeting of materials.
3. The furnishing of accurate estimates and standard costs to management with plating materials apportioned accurately as direct material rather than arbitrarily through distribution as overhead.

The following discussion is a possible solution to the problems.

General

Two general methods may be used:—

1. Keeping a running record of work processed and materials used over a long enough period so that average conditions may be approximated.
2. Using control instruments which permit a breakdown of productive material and losses, in conjunction with maintaining a record of materials used.

In any case wherein the cost of plating material is either very large or is a significant or critical part of total cost the second method is recommended and is the one discussed herein.

In either case a standard of reference must be adopted to which other costs are related. Since the largest single expense item is nickel, the cost per pound of nickel deposited may be adopted as a useful standard. However, it may be more convenient to translate this into cost for depositing a given speci-

fication on an arbitrary area (which may be described as the effective area) of work. One such method would be the material cost per 1,000 square inches of effective area plated, although it may be preferred to use 100 or 1,000 square feet at the standard.

The method suggested depends upon the following data:—

1. Nickel anodes added during the period.
2. Scrap nickel anodes withdrawn during the period.
3. Change in metal content from analysis at beginning and end of period.
4. Nickel sulfate and nickel chloride added during period.
5. Nickel deposited during period.
6. Determination of effective area plated from the number of the various parts plated.
7. Average weight of metal deposited on each of the various parts plated.

The general method is to determine from the above data the amount of nickel actually used and the amount of and nature of the losses encountered. The average cost per pound of nickel consumed can then be calculated, including losses, and the cleaning and chrome plating material costs computed on the same basis.

Weight Computations and Discussion

A. *Net Nickel Added*

Nickel anodes added (1 above)	xxxx
Nickel content of salts added (4 above)	xxxx
Net changes in nickel content (3 above)	xxxx
Total nickel added	xxxx
Less: Scrap nickel withdrawn (2 above)	xxxx
Net nickel added	xxxx

The percentage of nickel in nickel sulfate and nickel chloride (4 above) varies some from the value calculated from the standard formula found in handbooks due to the amount of water of hydration present. The former should have 20.9 percent nickel, and the latter 24.7 percent nickel, but these values should be checked by the laboratory on several different lots of commercial salts.

The nickel content (3 above) per gallon of solution is reported in the analysis.

B. *Drag-out and Filtering Loss*

Net nickel added (A above)	xxxx
Less: Nickel deposited (5 above)	xxxx
Drag-out and filtering loss	xxxx

Drag-out loss is the solution adhering to the work as it leaves the plating tank. It varies with different pieces of work and the number of pieces plated, other factors remaining constand. If this loss is approximately the same as in chrome plating, it is between one-half and one gallon per hour of operation. This loss is fairly consistent.

Filtering losses occur when the solution is removed from the plating tank and when changing filters.

The nickel deposited (5 above) is obtained by determining the total number of ampere-hours passing from the generator to the plating tank and dividing the result by 425. The result is the number of pounds of nickel deposited plus an allowance of 2 percent for the efficiency of the nickel-plating solution. The number of ampere hours passing from generator to plating tank can be determined with an instrument similar to an electric meter and called a Sangamo-meter. If there are electrical short-circuits such that all of the ampere-hours are not effective in depositing nickel, the result will be in error.

By keeping the number of anodes in the nickel tank fairly constant, the total weight of nickel will remain almost constant as they are completely replaced by use in a two or three month period. This should give fairly accurate results for drag-out and filtering losses.

If the nickel added (or consumed) is not reasonably close to the nickel deposited, little or no information can be obtained regarding drag-out and filtering losses, unless the anodes are removed from the tank and weighed. This is of questionable value due to cost and inaccuracies due to the water, carbon and anode bags which are also weighed.

A daily record of nickel deposited from Sangamo-meter readings can be used as a basis for replenishing anodes.

C. *Loss on Plating Racks*

Nickel deposited (5 above)	xxxx
Less: Nickel deposited on work (7 above)	xxxx
Loss on plating racks	xxxx

The amount of nickel plated on the racks is important because of the effect on the work. If too much is plated on racks, customer's specifications may not be met. The percentage of metal plated on racks to total nickel deposited should be reported.

The nickel deposited on work (7 above) is computed as follows:—

All parts must have the average weight of deposit determined by the laboratory or some agency equipped for accurate weighing. The total pieces of each part ran during the period are extended by the respective average weight of deposit for each part. The sum of these extensions will be the nickel deposited on work.

All of the above figures used in A, B and C above are expressed in pounds of nickel.

Accumulation of Costs

It has previously been mentioned that a certain weight of metal can be converted into a certain thickness of plating over a determined area. It is most easily accomplished by accumulating all the costs involved and reducing the total to the cost per pound of nickel deposited on the work.

All of the items entering into the cost of operating the nickel solution must be considered. All the figures in the subsequent forms would be expressed in dollars of cost.

A. Cost of Nickel Added (or Consumed)

Nickel anodes added	xxxx
Less: Credit for scrap nickel	xxxx
	xxxx
Nickel sulfate	xxxx
Nickel chloride	xxxx
Boric acid	xxxx
Anode bags and hooks	xxxx
Net change in nickel content	xxxx
Cost of anodes and salt additions	xxxx

As previously discussed in Sections B and C under "Weight Computations" the nickel consumed is used up in three different ways, deposited on the work, deposited on the plating racks, or lost in drag-out and filtering. The weights of nickel for each of the above categories has been previously determined. The above cost should be pro-rated based on relative weight of nickel.

	Pounds	% to Total	Share of Cost
Deposited on work	xxxx	xx	xxxx
Deposited on racks	xxxx	xx	xxxx
Drag-out and filtering loss	xxxx	xxx	xxxxx
Total nickel added	xxxx	xx	xxxx

The cost data on the first two items is carried forward to the final tabulation. Cost of the third item is carried to Section B, immediately following, for inclusion with other drag-out and filtering costs.

B. *Drag-out and Filtering Cost*

Drag-out loss cost (from previous section)	xxxx
Activated carbon	xxxx
Filter paper (33″)	xxxx
Lime	xxxx
Nickel carbonate	xxxx
Potassium permanganate	xxxx
Cost of drag-out and filtering	xxxx

This total cost is carried forward to the final tabulation form.

C. *Brightener Cost (Mdylite)*

Brightener No. 1, RL	xxxx
Non-Pitter No. 2	xxxx
Brightener No. 3	xxxx
Brightener Cost	xxxx

It is impossible to obtain data for distributing these costs between (1) drag-out losses (2) filtering losses and (3) nickel deposited, but should a further distribution be desirable the following estimate is made:—

Brightener	Drag-out	Filtering	Deposited
No. 1, RL	10%	80%	10%
Non-Pitter No. 2	5%	75%	20%
No. 3	30%	15%	55%

This total cost is carried forward to the final tabulation form.

D. *Cleaning and Acid Cost (Nickel)*

Anodex cleaner	xxxx
Muriatic acid	xxxx
Sulfuric acid	xxxx
Cleaning and acid cost and (nickel)	xxxx

This total cost is carried forward to the final tabulation form.

E. *Copper Strike Cost*

Copper ampdes	xxxx
Less: Scrap copper anodes	xxxx
	xxxx
Sodium cyanide	xxxx
Other salt additions	xxxx
Carbon	xxxx
Filter paper (18″)	xxxx
Copper strike cost	xxxx

This total cost is carried forward to the final tabulation form.

F. *Chrome Cleaning Cost*

Sodium cyanide	xxxx
Caustic soda	xxxx
Sodium carbonate	xxxx
Chrome cleaning cost	xxxx

This total cost is carried forward to the final tabulation form.

G. *Chrome Plating Solution and Anode Cost*

Chromic acid	xxxx
Sulfuric acid	xxxx

Lead anodes	xxxx
Net changes in chromic acid	xxxx
Chrome plating solution and anode costs	xxxx

Lead anodes have a life of about two years. The net change in chromic acid is determined by a solution analysis.

This total cost is carried forward to the final tabulation form.

Section	*Tabulation*		
A.	Cost of nickel deposited on work	xxxx	
A.	Cost of nickel deposited on racks	xxxx	
B.	Drag-out and filtering costs	xxxx	
C.	Brightener Cost	xxxx	
D.	Cleaning and acid costs	xxxx	
E.	Copper strike cost	xxxx	
	Total cost of nickel plating		xxxx
F.	Chrome cleaning cost	xxxx	
G.	Chrome plating solution and anode costs	xxxx	
	Total cost of chrome plating		xxxx
	Total cost of nickel and chrome plating		xxxx

Each of the above costs should be divided by the weight of nickel deposited on the work. The final result is the total material cost per pound of nickel deposited on the work.

Determination and Application of Standard

To effectively use the material cost per pound of nickel deposited in product costs or estimates two methods are available.

One method would be to apply the cost per pound of nickel deposited to each part based on the average weight of deposit applied to that part as determined by the laboratory. This information is necessary, in any event, as previously discussed.

However, for estimating new work, it would be necessary to determine the effective plating area of the part, then convert the area figure into weight of nickel deposited on that area for the required specification.

It may be advantageous as standard practice to determine the effective area of all parts plated and to convert the cost per

pound of nickel deposited standard into one applicable to area plated at a given specification. (In most plating set-ups where a variety of minimum specifications are run, it is necessary to plate all parts to the highest minimum required.)

This cost per pound of nickel deposited can be converted, for example, into cost per square foot plated 0.001″ thick by multiplying by 21.8.

This method has the advantage of uniform application to both standard product costs and estimated costs for new work.

Whether on a weight or area basis separate figures should be developed for nickel plating and for chrome plating to properly handle special work such as chrome flash operations.

Cost Comparisons and Efficiency Studies

The arrangement of the tabulation of "cost per pound of nickel deposited" on a spread sheet or some other form affording a comparison of unit costs of each phase of the plating operations can be most useful in bringing to light deviations from normal.

Two calculations that can be made on an individual part basis are as follows:—

1. To check % of actual efficiency of nickel utilization.
   100 (weight on nickel deposited on the work—1)
   (average weight × number of pcs. plated)
2. To check deviation from minimum requirements.
   (in this case .001″)
   100 (weight of nickel deposited on work—1)
   (total effective plating ÷ 21.8)

Summary

It is felt that the procedure outlined will furnish most of the answers concerning plate costs, will provide a positive material control for budgeting, and will give the increased accuracy in estimating work and standard costs derived from handling plating materials as productive material rather than through arbitrary distribution of overhead.

PERSONALS

Ernest W. Scott, R.I.A., was recently promoted to the office of controller, Ryerson Press Co. Ltd. Mr. Scott is a member of the Toronto Chapter and a member of the Ontario Educational Committee.

« STUDENT SECTION »

ADVANCED COST ACCOUNTING

Paper No. 2

QUESTION 2 (12 marks)

Albert Clothes uses an estimating cost system, and estimates its costs for manufacturing a single product as follows:—

Material, 8 yards x $1.20	$ 9.60
Labor, 10 hours x .60	6.00
Factory Overhead, 10 hours x 0.70	7.00
Total estimated unit cost	$22.60

During the month of September, 18,000 units were completed. At September 30th there were in process 300 units, 100 percent completed as to material and 50 percent completed as to labor and manufacturing expense.

The manufacturing costs for the period were as follows:—

Materials purchased and put into process, 68,000 yards	$61,200.00
Direct Labor, 79,000 hours	48,980.00
Sundry manufacturing expenses	57,000.00
Sales 6,000 x $40	

PREPARE:—

Journal entries to record manufacturing operations and to close out Adjustment Accounts.

NOTE:—

Owing to typographical error, the completed production was stated as 18,000 units. It was intended that the production should be 8,000 units, and the solution which follows is on this latter basis.

SOLUTION TO QUESTION 2

Materials-Stores	$ 61,200	
Accounts Payable		$ 61,200
Direct Labor	48,980	
Accrued Payroll		48,980
Manufacturing Expenses	57,000	
Accounts Payable (or other acc.)		57,000
Work-in-process-Materials	61,200	
Materials-Stores		61,200
Work-in-process-Labor	48,980	
Direct Labor		48,980
Work-in-process-Mfg. Expenses	57,000	
Mfg. Expenses		57,000
Finished Goods	180,800	
Work-in-process-Material		76,800
Work-in-process-Labor		48,000

Work-in-process Mfg. Expenses		56,000
Cost of Sales	135,600	
Finished Goods		135,600

	Book Inventories	Estimated Inventories	Variances
Work-in-Process-Mat.	$15,600 Cr.	2,880 Dr.	18,480 too high
Labor	980 Dr.	900 Dr.	80 too low
Mfg. E.	1,000 Dr.	1,050 Dr.	50 too high

Work-in-Process-Material	$ 18,480.00	
Adjustment Account		$ 18,480.00
Adjustment Account	80.00	
Work-in-Process-Labor		80.00
Work-in-Process-Mfg. Expenses	50.00	
Adjustment Account		50.00
Adjustment Account	18,480.00	
Work-in-Process-Material		667.95
Finished Goods		4,453.01
Cost of Sales		13,359.04
Work-in-Process-Labor	1.47	
Finished Goods	19.63	
Cost of sales	58.90	
Adjustment Account		80.00
Adjustment Account	50.00	
Work-in-Process-Mfg. Exp.		0.92
Finished Goods		12.27
Cost of sales		36.81

COMMENTS

This estimating cost type of problem is not difficult — and in this case the difficulty was experienced not by the students but by the examiner who had to allot marks on whichever basis the student decided to use. Many apparently decided there was an error — and made the correction — others did not, and were naturally puzzled by the abnormal figures. The examiner endeavoured to give credit, insofar as he could, if the student indicated his knowledge of the estimating cost system.

It was intended that students properly dispose of this adjustment account, and if no attempt was made to do so — marks were deducted.

ADVANCED COST ACCOUNTING

Comments by A. V. HARRIS, C.A., R.I.A.

Paper No. 1

QUESTION 3 (12 marks)

The Farm Implement Company, Ltd., manufactured farm machinery.

The company sells directly to farmers in three territories: Quebec, Ontario and New Brunswick.

The sales and selling expense budgets for the year present the following information:—

	Quebec	Ontario	New Brunswick
Net sales	$200,000.00	$300,000.00	$100,000.00
Salesmen's salaries	10,000.00	15,000.00	5,000.00
Salesmen's travelling expenses	2,000.00	9,000.00	1,900.00
Warehouse expenses	1,500.00	3,000.00	1,000.00
Delivery expenses	2,000.00	9,000.00	1,500.00
Supplies	700.00	800.00	500.00

The estimated cost of manufacturing the machinery sold is 70 percent of the net sales. Other estimated expenses as follows:—

Sales commission paid to salesmen, 7 percent of net sales.
General sales salaries, $12,000 distributed on basis of net sales.
Sales office expense $12,000 distributed equally.
Credit and collection, 2 percent of net sales.
Advertising appropriation, 4 percent of net sales.

REQUIRED:—

(a) An Estimated Profit and Loss Statement for each territory.
(b) A predetermined distribution expense rate for each territory which can be used in applying such expenses to orders as they are received.

SOLUTION TO QUESTION 3

The Farm Implement Company, Ltd.
Estimated Profit and Loss Statement for Year

	Quebec	Ontario	New Brunswick
Net sales	$200,000	$300,000	$100,000
Less: Cost of sales	140,000	210,000	70,000
Gross profit on sales	60,000	90,000	30,000
Less:			
Expenses			
Salesmen's salaries	10,000	15,000	5,000
Travelling expenses	2,000	9,000	1,900
Warehouse expense	1,500	3,000	1,000
Delivery expense	2,000	9,000	1,500
Supplies	700	800	500
Salesmen's commission	14,000	21,000	7,000
General sales salaries	4,000	6,000	2,000
Sales office expense	4,000	4,000	4,000
Credit and collection	4,000	6,000	2,000
Advertising	8,000	12,000	4,000
	$ 50,200	$ 85,800	$ 28,900
Net Profit	9,800	4,200	1,100

Selling expenses for Quebec $ 50,200 = 25.10%
200,000

Selling expenses for Ontario	85,800	=28.60%
	300,000	
Selling expenses for New Brunswick	28,900	=28.90%
	100,000	

COMMENTS ON QUESTION 3

This simple problem in distribution costs was not particularly troublesome to students. Marks were very good, and the majority of students decided that the best and simplest basis of expense distribution was that based on net sales.

ACCOUNTING II

Comments by J. D. CAMPBELL, C.A., R.I.A.

QUESTION 6 (10 Marks)

A plant cost $1,000,000, against which a reserve for depreciation of $400,000 has accumulated has been appraised to be worth (sound value) $900,000. Appraisal shows reproduction value new $1,500,000 with estimated depreciation $600,000. The directors wish you to show the appreciated value in the accounts. If the depreciation rate applicable is 10% per annum, draft the necessary entries to incorporate the appraisal and the depreciation entries to be made at the end of the first year.

SOLUTION

Dr.	Plant-appraisal	$500,000	
	Cr. Reserve depreciation plant-appraisal		$200,000
	Appraisal surplus		300,000
	Dr. Depreciation plant	150,000	
	Reserve depreciation plant		100,000
	Reserve depreciation plant-appraisal		50,000
	Dr. Appraisal surplus	50,000	
	Earned surplus		50,000

COMMENTS:

The answers submitted to this question indicated that, in the majority of cases, the student failed to recognize the fundamentals involved. In the majority of cases only partial presentation was made. In practically all cases no entry was given representing the amortization of the appraisal surplus, covering the amount of the increased value which had been realized in the transfer to the customer of the services rendered by the appraised fixed assets during the year.

As the appraisal value of the plant is recorded on the books, the charge for depreciation should have been calculated on this value. Where the student failed to do this a penalty was imposed.